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Effects of group therapy based on Quality-of-Life Improvement on the meaning of life, self-compassion, emotional self-regulation, and quality of life improvement in patients with MS

Marziye Feizi¹, Maryam Bakhtiari^{1*}, Mohammad Ali Sahraian², Abbas Masjedi Arani¹, Amir Sam Kianimoghadam¹

ABSTRACT

Background: Multiple sclerosis (MS) is a chronic autoimmune disease affecting the central nervous system. **Objectives:** This study aimed to investigate the effects of Group Therapy based on Quality-of-Life Improvement (GTQOLI) on the meaning of life, self-compassion, emotional self-regulation, and quality of life (QOL) in patients with MS. **Method:** The current study was a pre-test-post-test randomized clinical trial with a control group and a six-month follow-up. The statistical population of the research included all the MS patients who sought treatment at the Specialized MS Clinic of Sina Hospital Tehran, Iran. With the convenience sampling method, 42 people were selected as a sample and randomly assigned to two experimental and control groups. The experimental group received GTQOLI for eight sessions. To collect data, the Meaning of Life Questionnaire, Affective Style Questionnaire, Multiple Sclerosis Quality of Life (MSQOL-54), and Self-Compassion Scale were used. Multivariate analysis of variance test was used to analyze the data. **Result:** The results showed a significant difference between the experimental and control groups in terms of the search for meaning, self-compassion, and overall QOL in individuals with MS ($P<0.05$). The interaction effect of time and group for the total score of GTQOLI was statistically significant ($F=3.426$, $P<0.05$). **Conclusion:** In GTQOLI, clients are taught essential skills for improved life management and the pursuit of life meaning. This approach enables them to regulate negative thoughts and build personal goals around valued areas of life. More clinical trials are needed.

Keywords: Meaning of Life; Self-Compassion; Emotional Self-Regulation; Quality of Life.

1. INTRODUCTION

Multiple sclerosis (MS) is a chronic autoimmune disease affecting the central nervous system. It is a progressive disease that can cause a range of physical and cognitive impairments in young adults, ranging from mild to severe (Ghasemi et al., 2017). Despite the availability of numerous treatments for this progressive disease, it remains one of the most debilitating illnesses. It impacts various aspects of life and disrupts the normal life of an individual during a time when they need to be active, start a family, and establish their life. However, the onset of this disease and its numerous unpredictable complications can cause significant disturbances in the patient's life (Morgante, 2000). The quality of life (QOL) of MS patients is influenced by factors such as the severity of the disease, its duration, and the medications used (Benedict et al., 2005). The World Health Organization (WHO) defines QOL as a multidimensional concept. It is a patient's perception of their life situation, shaped by their cultural and value systems and related to their goals, expectations, standards, interests, and life experiences (Bishop et al., 2007).

A diminished QOL can often lead to the adoption of ineffective coping and adaptation mechanisms. This in turn, can escalate stress levels, potentially exacerbating the severity of the disease (Blanco-Rivera et al., 2008). Research evidence suggests that interventional programs for patients with MS should focus on teaching strategies, such as effective and efficient coping mechanisms, emotional self-regulation training, and enhancing of motivational and cognitive resources (Johns et al., 2017). These interventions primarily aim to reduce stressful experiences and the emotional sequelae associated with these experiences, such as anxiety and depression, as well as psychological disorders (Church et al., 2016; Deckro et al., 2002; Misra et al., 2000; Rawson et al., 1994). According to Cassady, patients with MS often divert their attention towards activities that are unrelated to life, become mentally preoccupied with death and physical worries, and consequently pay less attention to personal life and enjoyment.

As a result, irrelevant thoughts and negative self-evaluations can deter these individuals (Cassady, 2004). Emotional self-regulation is defined as the processes by which individuals manage their emotions, determining which emotions they experience, when they encounter them, and how these emotions are expressed (Nikmanesh et al., 2015). Garnefski and Kraaij propose that any impairment in emotional self-regulation can potentially predispose an individual to psychological issues, such as depression and anxiety (Garnefski and Kraaij, 2006). Substantial evidence suggests that individuals who possess emotional self-regulation, meaning those who have a good understanding of their own emotions, can effectively manage them, and comprehend the emotions of others tend to be successful and efficient in various areas of life. Generally, self-regulating emotions is a crucial characteristic for any individual. Emotional self-regulation strategies describe how individuals process their thoughts following a negative experience or traumatic event (HajShamsayi et al., 2014).

Patient's research indicates that a deficiency in emotional self-regulation can lead to a decrease in QOL (Aydin and Emmioglu, 2009). Given the chronic and progressive nature of MS, this disease can have profound impacts on a patient's emotions. Consequently, it can be inferred that these patients often experience a lack of self-compassion (Adibi et al., 2021). Neff conceptualizes self-compassion as a structure composed of three elements: (1) self-kindness versus self-judgment, which involves understanding oneself instead of passing judgment or criticism and showing compassion and support for patient's shortcomings and inadequacies; (2) common humanity versus isolation, which recognizes that all humans are flawed and make mistakes; (3) mindfulness versus over-identification, which is about maintaining a balanced and clear perspective on present experiences, ensuring that the painful aspects of an experience are neither ignored nor allowed to dominate the mind excessively.

Combining these three interrelated components characterizes an individual who possesses self-compassion (Neff, 2003; Neff, 2009). Numerous studies have indicated that higher levels of self-compassion are associated with lower levels of anxiety and depression (Neff, 2009). Additionally, some other studies have demonstrated that higher self-compassion is associated with fewer mental disorders, improved psychological well-being, and increased resilience to stress (Feldman and Kuyken, 2011; Gilbert, 2005; MacBeth and Gumley, 2012). Meanwhile, the meaning of life is intimately tied to a patient's psychological health and well-being. When life is perceived as meaningful, it can lead to a reduction in negative emotions, such as anxiety and depression, ultimately decreasing the risk of mental illnesses (Feldman and Snyder, 2005). One of the most notable definitions of the meaning of life was proposed in 1984 by Frankel, who posited that people find meaning within themselves when they engage in their favorite activities, interact with others, or immerse themselves in nature (Halama and Dedova, 2007).

While pharmacological interventions for MS have demonstrated reliable results, they are unsuitable for all patients. These treatments require appropriate supervision and can lead to numerous side effects, including chest pain, chills, cough, fever, headache, and unusual fatigue. Furthermore, the literature indicates that the psychological symptoms experienced by MS patients are not fully addressed by these treatments. Indeed, psychological interventions can potentially enhance the mental and physical well-being of MS patients. These interventions can address mood disorders, enhance self-management and adherence to treatment protocols, reduce stress levels, and improve coping mechanisms. This enables better management of emotions and thoughts and

improves the overall quality of life. Moreover, group therapy can foster acceptance, facilitate the expression of illness-related emotions, and provide a supportive peer network (Montañés-Masias et al., 2022).

Among available psychological treatments, QOL therapy stands out. This approach aims to foster mental well-being and satisfaction with life. It is based on five key concepts, evaluated and addressed across 16 areas. These five concepts, abbreviated as CASIO, include (1) conditions of living, (2) attitudes, (3) standards (the benchmarks or goals we set for ourselves), (4) importance of values, and (5) overall satisfaction with life (less critical) (Frisch, 2005). The QOL improvement approach is centered around teaching principles and skills that assist clients in identifying, pursuing, and fulfilling their needs, goals, and aspirations in the important areas of their lives (Frisch, 2005). Research indicates that treatment based on the QOL model can have a positive impact on the recovery of patients with bipolar disorder (Faridhosseini et al., 2017). In another study, it was found that skill training based on QOL improvement is effective in the recovery of patients undergoing dialysis treatment.

Generally, treatment focused on enhancing QOL can play a role in preventing relapse (Emami and Kajbaf, 2015). While therapeutic approaches focused on GTQOLI have proven effective in enhancing outcomes or preventing relapse in various patient groups, there appears to be a research gap concerning their application in aiding patients with MS. Indeed, the significance of MS lies in its potential to cause mood disorders, which can trigger the recurrence of the disease, exacerbate neurological attacks experienced by patients, and deteriorate their clinical symptoms. Consequently, those affected by MS may suffer from both physical and mental problems, imposing substantial costs on these patients. Given the presence of particular challenges faced by MS patients and the existing research gap in this area, the present study aimed to explore the impact of group therapy focused on GTQOLI. Specifically, this study aimed to examine its effects on the meaning of life, self-compassion, emotional self-regulation, and overall GTQOLI in patients with MS.

2. MATERIAL AND METHODS

In this applied research, data collection was carried out using a convenience sampling method. The study was designed as a clinical trial with both a waitlist control group and an experimental group. The study population consisted of MS patients who sought treatment at the Specialized MS Clinic of Sina Hospital in Mashhad, Iran. The randomization into the control and experimental groups was achieved through a simple randomization process, with each individual serving as a unit of randomization. The participants were assigned to different groups using a table of random numbers. Each participant's name was associated with a number, and these numbers were used to categorize the participants into their respective groups. The participants were divided into two groups. Those with even numbers were placed in the intervention group, while those with odd numbers were assigned to the control group.

The sample size was determined using the G*Power software (Figure 1). With an effect size of 0.8, an alpha of 0.5, a power of 0.80, and a 1:1 ratio for the number of samples in each group, a total sample size of 42 participants was calculated, with 21 individuals in each group (Faul et al., 2009).

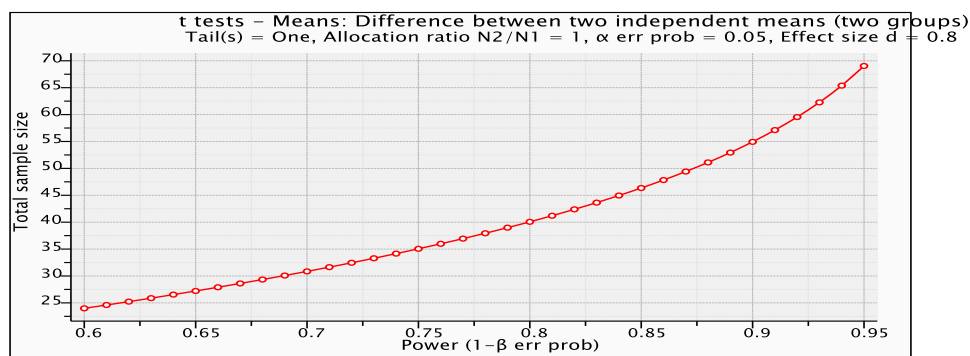


Figure 1 The Power Plot window of G*Power 3.0.

The eligibility criteria for participation in the study were as follows: Diagnosis of MS, absence of suicidal ideation or self-harm tendencies, no participation in psychological interventions in the past year, willingness to participate in the research, and not taking

any psychiatric medications during the study. On the other hand, the criteria for exclusion from the study were missing two consecutive sessions, experiencing suicidal thoughts during the course of treatment, and concurrent participation in another psychotherapy program.

Measures

Meaning of Life Questionnaire (MLQ)

The MLQ was introduced by Steger, Fraser, Avishi, and Kaler in 2006 to assess the presence of meaning in life and the efforts made to find it. This questionnaire consists of 10 questions. The initial MLQ involved 44 questions designed by the researchers. Following this, an exploratory factor analysis was conducted, which resulted in the identifying of two components: The existence of meaning in life and the search for meaning in life. These components were represented by 17 questions. In this analysis, each scale was represented by five items. According to the research conducted by Steger et al., (2006), the validity of MLQ for evaluating life was measured to be 0.86. The subscale of the presence of meaning in life had a validity of 0.87. Also, the reliability coefficients of the subscales of the presence of meaning in life and search for meaning in life were estimated at 0.73 and 0.70, respectively (Steger et al., 2006). The reliability of this tool was reported by (Amini et al., 2019). Based on Cronbach's alpha coefficient, the presence of meaning in life and search for meaning in life subscales were found to have reliabilities of 0.84 and 0.86, respectively. Also, the total score of the questionnaire had a reliability of 0.84 (Amini et al., 2019).

Self-Compassion Scale (SCS)

The SCS, which contains 26 items, was developed by Neff, (2003) to measure the level of self-compassion. It consists of six subscales, including self-kindness (5 questions), self-judgment (5 questions), human commonality (4 questions), isolation (4 questions), mindfulness (4 questions), and over-identification (4 questions). Each subscale assesses a different aspect of an individual's relationship with their experiences. The scale uses a five-point Likert scale for its questions, ranging from 0 ("almost never") to 4 ("almost always"). The questions related to the subscales of self-judgment, isolation, and over-identification are reverse-scored.

The Cronbach's alpha coefficient was measured to be 0.92 for the entire scale and ranged from 0.75 to 0.81 for the subscales. Also, the test-retest reliability coefficient of the scale, measured over a two-week interval, was reported to be 0.93 (Hatzipapas et al., 2017). In a study conducted by Azizi et al., (2013), the alpha coefficient for the overall score of the SCS was reported to be 0.78. Cronbach's alpha coefficients for the subscales of self-kindness, self-judgment, common humanity, perceived isolation, mindfulness, and over-identification were measured to be 0.79, 0.79, 0.93, 0.90, 0.88, and 0.88, respectively. The validity of the questionnaire has also been reported as favorable (Azizi et al., 2013).

Affective Style Questionnaire (ASQ)

Hofmann and Kashdan, (2010) consists of 20 questions, rated on a five-point Likert scale, ranging from "not true about me at all" to "very true about me". After being translated, the questionnaire was reviewed by psychological experts for content validity, and it was subsequently approved. The questionnaire consists of three components or subscales: Concealing (8 questions), adjusting (7 questions), and tolerating (5 questions). The results of the principal component analysis indicated that three factors could be extracted based on their eigenvalues.

The first factor, concealing, explained 17.8% of the variance, the second factor, adjusting, accounted for 14.97% of the variance, and lastly, the third factor, tolerating, explained 8.43% of the variance. The validity coefficients for the subscales of concealing, adjusting, and tolerating were 0.70, 0.75, and 0.50, respectively, and the total reliability coefficient was 0.81 (Hofmann and Kashdan, 2010). After undergoing a process of translation and back-translation, the questionnaire was reviewed by relevant experts, and its content validity was confirmed. In Iranian research, the reliability of this questionnaire was reported to be above 0.80, indicating a high level of consistency in the responses (Kareshki, 2013).

Multiple Sclerosis Quality of Life (MSQOL-54)

The MSQOL-54 is a comprehensive, multidimensional health-related QOL scale. It combines the 36-item Short Form Health Survey (SF-36) with an additional 18 items that are specific to MS. These other items cover aspects such as fatigue and cognitive function (Lazaro et al., 2019). This scale was designed by Vickrey in 1995 (Vickrey et al., 1995). The scores of QOL and its dimensions range from 0 to 100 in this questionnaire, with higher scores indicating a higher QOL. The validity and reliability of this scale have been affirmed in international and local studies. In a study focusing on patients with MS, the MSQOL subscales demonstrated strong internal consistency, with Cronbach's alpha coefficients ranging from 0.75 to 0.96. The scale's reliability was further confirmed

through retesting, which yielded correlation coefficients between 0.66 and 0.96 for the subscales. In this regard, evaluated the face and content validity of this instrument. They reported its reliability to exceed 0.7 as per Cronbach’s alpha method (Lazaro et al., 2019).

Procedure and study design

The research was conducted using the following methodology. Initially, ethical approval was obtained from the Ethics Committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.MSP.REC.1401.251), followed by the acquisition of a clinical trial code (IRCT20201009048974N5). Next, a psychologist with a doctoral degree (to reduce the possibility of bias in the data, the evaluation was conducted by another psychologist) visited the private MS center and reviewed the patients’ files. Many patients who met the research inclusion criteria were selected using a convenience sampling method in 2022. During the psychologist’s initial visit, in adherence to ethical codes, the participants were provided with detailed information about the research, including the number of sessions, duration of each session, methodology of the sessions, and their random assignment to either the experimental or control waiting groups. They were also assured of the confidentiality of their information and informed of their right to withdraw from the research at any time. Consent to participate in the study was then obtained from the participants.

Subsequently, a total of 42 individuals were selected and randomly divided into two groups of 21 each. These two groups comprised the experimental group and the control group. To control for confounding variables (e.g., age, gender, education, marital status, and employment status) in the experimental and waiting groups, the Chi-square test was utilized. Following the observation of no significant differences in confounding variables between the experimental and control groups, treatment aimed at enhancing QOL was administered to the experimental group by Michael Frisch’s protocol. The treatment regimen consisted of eight 90-minute sessions conducted twice a week in a group setting (Table 1).

These sessions were facilitated by a doctoral student in clinical psychology under the guidance of a supervisor. The second group on the waiting list was treated following the completion of the experimental patient’s treatment period. In the pretest phase, all participants were administered the MLQ, SCS, ASQ, and MSQOL-54 questionnaires. Upon completion of the treatment sessions and at the end of a three-month follow-up period, these questionnaires were re-administered to the experimental and control groups. Initial counseling was provided to all participants to minimize attrition. In adherence to ethical principles, psychological intervention was also offered to the control group upon the conclusion of the research. The gathered data was analyzed using a multivariate analysis of variance (MANCOVA) test in SPSS Version 26.

Table 1 Treatment protocol based on GTQOL

First session: Establishing communication, introducing treatment and training objectives, discussing QOL, life satisfaction, and psychological well-being topics, and conducting a pretest.
Second session: Defining GTQOLI, introducing QOL dimensions, and identifying problematic issues.
Third session: Changing attitudes towards QOL through modification of situation perception and rectification of any cognitive distortions or negativity.
Fourth session: Changing goals and standards, proposing a strategy to enhance satisfaction in life (e.g., marital relationship and employment), teaching goal and standard modification for learning, and adopting realistic and flexible goals.
Fifth session: Changing priorities: This strategy involves re-evaluating priorities and emphasizing critical and controllable areas.
Sixth session: Enhancing satisfaction in previously overlooked areas as the final strategy.
Seventh session: Teaching the three pillars of QOL-based therapy (fostering inner abundance, finding meaning in life, and quality time).
Eighth session: Summary and posttest implementation.

3. RESULTS

This study involved 42 participants, who were evenly divided into two groups: A control group and an experimental group, each consisting of 21 individuals. The demographic characteristics of the subjects showed that the mean and standard deviation (SD) of age were 38.43 and 8.975 years in the control group and 37.62 and 6.629 years in the experimental group, respectively. In the control group, there were 3 (14.28%) men and 18 (85.72%) women, while in the experimental group, there were 4 (19.05%) men and 17 (80.95%) women. In the control group, 2 (9.52%) participants had a high-school diploma, 5 (23.81%) had a post-graduate degree, and 14 (66.67%) had a bachelor’s degree or higher. In contrast, in the experimental group, there were 3 (14.28%) people with a diploma, 4 (19.05%) with a post-graduate degree, and 14 (66.67%) with a bachelor’s degree or higher.

In the control group, most individuals were married, with 20 people (95.23%) in this category, while only 1 (4.77%) person was single. In the experimental group, the proportion of married individuals was slightly lower, with 19 (90.47%) individuals being married and 2 (9.53%) being single. The collected data was analyzed using a t-test and repeated measures analysis of variance (ANOVA). Descriptive statistics for various factors, including meaning in life, search for meaning in life, self-compassion, emotional self-regulation, physical health, and psychological well-being, are presented in (Table 2). Figure 2 and Figure 3 present Frequency of Duration of Illness in years and Employment of participants.

Table 2 Descriptive indicators of the presence of meaning in life, search for meaning in life, self-compassion, emotional self-regulation, physical health, and psychological health of patients with MS

		Pretest			Posttest			Follow-up		
Variables	Groups	Mean	SD	The mean difference between groups	Mean	SD	The mean difference between groups	Mean	SD	The mean difference between groups
Presence of meaning in life	Control	23.904	3.315	t (41) = 0.107 P=0.916	22.667	4.629	t (41) = -0.934 P=0.362	21.571	3.735	t (41) = -0.043 P=0.966
	Experimental	23.809	3.010		23.761	2.981		21.619	4.104	
Search for meaning in life	Control	22.809	2.749	t (41) = 0.316 P=0.756	22.381	4.043	t (41) = -4.899 P=0.000	20.761	6.065	t (41) = -3.647 P=0.002
	Experimental	22.476	5.085		26.571	3.009		25.190	2.731	
Self-compassion	Control	89.952	6.727	t (41) = 0.877 P=0.391	89.142	5.842	t (41) = 5.614 P=0.000	89.428	5.482	t (41) = 3/107 P=0.006
	Experimental	88.523	4.203		97.000	3.937		94.000	4.549	
Emotional regulation	Control	58.714	6.936	t (41) = -0.519 P=0.610	59.476	6.485	t (41) = 0.208 P=0.837	59.714	6.100	t (41) = 1.955 P=0.065
	Experimental	59.428	5.670		59.904	6.300		59.571	5.094	
Physical health	Control	57.387	18.433	t (41) = 0.784 P=0.442	57.721	15.657	t (41) = -0.109 P=0.914	55.576	15.940	t (41) = 0.145 P=0.886
	Experimental	56.642	16.945		57.542	12.065		55.163	11.794	
Mental health	Control	57.308	12.895	t (41) = 0.098 P=0.923	57.091	16.986	t (41) = 3.270 P=0.001	57.037	11.557	t (41) = 3.621 P=0.002
	Experimental	57.043	15.331		64.772	14.444		64.260	12.264	
Total score of GTQOLI	Control	57.349	13.498	t (41) = 0.383 P=0.705	57.406	14.812	t (41) = 2.190 P=0.041	56.306	11.577	t (41) = 3.009 P=0.007
	Experimental	56.843	14.551		61.157	12.039		59.711	10.513	

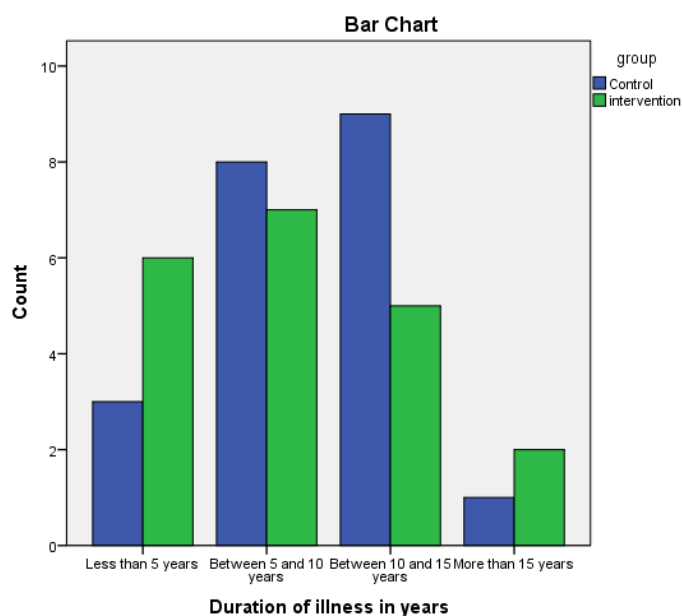


Figure 2 Frequency of Duration of Illness in years

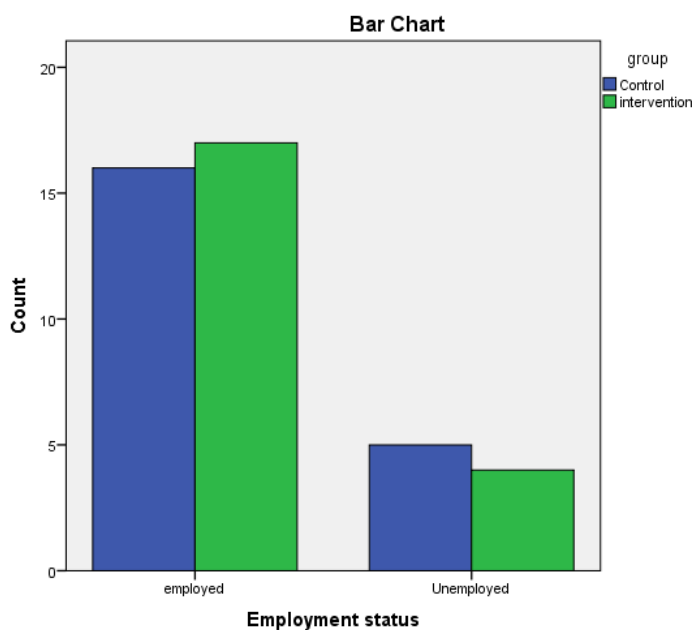


Figure 3 Frequency of Employment

The results presented in Table 2 indicate that during the pretest stage, the mean score of the presence of meaning in life was 23.904 (SD=3.315) in the control group and 23.809 (SD=3.010) in the experimental group. Furthermore, the mean score of the search for meaning in life was 22.809 (SD=2.749) in the control group and 22.476 (SD=5.085) in the experimental group. Also, the control group had a mean self-compassion score of 89.952 (SD=6.727), while the experimental group had a mean score of 88.523 (SD=4.203). Regarding emotional self-regulation, the control group had a mean score of 58.714 (SD=6.936), and the experimental group had a mean score of 59.428 (SD=5.670). Moreover, the mean total GTQOLI score was 57.349 (SD=13.498) in the control group and 56.843 (SD=14.551) in the experimental group. Based on the results, the control group had a mean physical health score of 57.387 (SD=18.433), and the experimental group had a mean score of 56.642 (SD=16.945). Regarding mental health, the control group had a mean score of 57.308 (SD=12.895), and the experimental group had a slightly lower mean score of 57.043 (SD=15.331).

In the posttest phase, the mean score of the presence of meaning in life was 22.667 (SD=4.629) in the control group, and the experimental group had a mean score of 23.761 (SD=2.981). The mean score of the search for meaning in life was 22.381 (SD=4.043) in the control group and 26.571 (SD=3.009) in the experimental group. Also, the control group had a mean self-compassion score of 89.142 (SD=5.842), whereas the experimental group had a significantly higher mean score of 97.000 (SD=3.937). Based on the results, the control group had a mean emotional self-regulation score of 59.476 (SD=6.485), and the experimental group had a mean score of 59.904 (SD=6.300). Moreover, the mean total score of GTQOLI was 57.406 (SD=14.812) in the control group and 61.157 (SD=12.039) in the experimental group. Besides, the mean physical health score was 57.721 (SD=15.657) in the control group and 57.542 (SD=12.065) in the experimental group. Also, the mean of mental health score was 57.091 (SD=16.698) in the control group and 64.772 (SD=14.444) in the experimental group.

In the follow-up stage, the mean score of the presence of meaning in life was equal to 21.571 (SD=3.735) in the control group and 21.619 (SD=4.104) in the experimental group. Also, the mean score of the search for meaning in life was equal to 20.761 (SD=6.065) in the control group and 25.190 (SD=2.731) in the experimental group. The mean self-compassion score was 89.428 (SD=5.482) in the control group and 94.000 (SD=4.549) in the experimental group. Moreover, the mean score of emotional self-regulation was 59.714 (SD=6.100) in the control group and 59.571 (SD=5.094) in the experimental group. According to the results, the mean score of total GTQOLI was 56.306 (SD=11.577) in the control group and 59.711 (SD=10.513) in the experimental group. Also, the mean physical health score was 55.576 (SD=15.940) in the control group and 55.163 (SD=11.794) in the experimental group. Finally, the mean score of psychological well-being was equal to 57.037 (SD=11.557) in the control group and 64.260 (SD=12.264) in the experimental group.

The results about the mean differences between the groups, as presented in Table 2, indicate no significant difference between the control and experimental groups in the pretest scores across all research variables ($P>0.05$). Despite the lack of substantial differences in the pretest scores, the posttest and follow-up scores revealed substantial differences between the control and experimental groups for all variables ($P<0.05$), except the presence of meaning in life, emotional self-regulation, and physical health. Therefore, it can be inferred that group therapy, based on GTQOLI, has a significant impact on the variables of the search for meaning in life, self-compassion, psychological well-being, and overall GTQOLI. The results about the repeated measures ANOVA, examining the interactive effect of time and group on the variables of presence of meaning in life, search for meaning in life, self-compassion, emotional self-regulation, physical health, psychological well-being, and the total score of GTQOLI, are presented in (Table 3).

Table 3 The results of repeated measures ANOVA regarding the interactive effects of time and group on the research variables

Variables	Source	Sum of squares	df	Mean square	F	Sig.	Eta squared
Presence of meaning in life	Time×group	8.873	2	4.437	0.998	0.373	0.024
Search for meaning in life	Time×group	151.190	1.829	82.672	7.176	0.002	0.152
Self-compassion	Time×group	465.571	2	232.786	28.057	0.000	0.412
Emotional regulation	Time×group	4.000	1.365	2.928	0.105	0.824	0.003
Physical health	Time×group	1.697	1.639	1.035	0.023	0.960	0.001
Psychological well-being	Time×group	981.417	1.516	275.625	5.077	0.015	0.113
Total score of GTQOLI	Time×group	469.281	2	234.641	3.426	0.037	0.079

The results presented in Table 3 indicate that the interaction effect of time and group for the variable of search for meaning in life was statistically significant ($F=7.176$, $P<0.05$). The eta squared value for this variable was 0.152, suggesting that approximately 15% of the variance could be attributed to the group therapy based on GTQOLI. The results presented in Table 3 indicate that the interaction effect of time and group on the variable of self-compassion was statistically significant ($F=28.057$, $P<0.05$). The eta squared value for this variable was 0.412, suggesting that approximately 41% of the variance in self-compassion could be attributed to group therapy based on GTQOLI.

The results indicated that the interaction effect of time and group for the total score of GTQOLI was statistically significant ($F=3.426$, $P<0.05$). The eta squared value for this variable was 0.079, suggesting that approximately 8% of the variance related to the total score of GTQOLI could be attributed to the group therapy based on GTQOLI. Additionally, the results indicated that the interaction effect of time and group on the variable of psychological well-being was statistically significant ($F=5.077$, $P<0.05$). The eta squared value for this variable was 0.113, suggesting that approximately 11% of the variance in psychological well-being could be attributed to group therapy based on GTQOLI. However, the interaction effect of time and group on the variables of presence of meaning in life, emotional self-regulation, and physical health was not significant ($P>0.05$).

4. DISCUSSION

This study aimed to examine the effectiveness of group therapy focused on GTQOLI in various aspects of life, such as the meaning of life, self-compassion, emotional self-regulation, and overall GTQOLI in patients with MS. The findings revealed that the interaction effect of time and QOL therapy significantly influenced the search for meaning, self-compassion, and overall QOL in individuals with MS. The initial hypothesis of this study posited that a treatment focused on enhancing QOL would effectively improve the QOL of patients with MS when compared to a control group. This finding aligns with the results of previous studies conducted by (Porzoor et al., 2015; Frisch, 2013; Abedi and Vostanis, 2010; Rodrigue et al., 2005). This finding can be elucidated by understanding that QOL treatment is a therapeutic approach grounded in knowledge and skills. It equips clients with the necessary understanding and abilities to attain satisfaction in the most significant and valuable aspects of their lives.

This method adopts a holistic view of life, with the objectives of each intervention stage aligning with the patient's life goals. This treatment approach enables patients to perceive the direct correlation between an intervention or task and the fulfillment of their primary needs, goals, and desires. Moreover, evaluating and understanding patients' challenges and capabilities provide a holistic view of life. This perspective is based on functioning across different domains of daily living, regardless of any mental or physical issues, disorders, or disabilities. This treatment approach offers a structured plan and roadmap to enhance QOL by employing positive psychology interventions using the five-point CASIO model of life satisfaction. By examining and measuring the 16 dimensions of QOL, problematic aspects of life are identified, facilitating discussions about goals, values, and priorities.

Applying the model and principles of the five dimensions, namely, satisfaction with various areas of life, objective characteristics and living conditions, satisfaction criteria, evaluation of areas of satisfaction in terms of importance, and overall satisfaction, leads to an increase in life satisfaction. It causes an improvement in QOL among individuals with MS (Frisch, 2005). The next hypothesis of this study, which suggested that a treatment approach centered on QOL enhancement would effectively assist in uncovering life's meaning for patients with MS, was also confirmed when compared to a control group. This finding is consistent with the results of previous studies by (Araghian et al., 2020). This finding can be elucidated by understanding that QOL therapy is a form of meaning therapy.

It aids clients in identifying what holds the most significance for their happiness and health, both in the present moment and throughout their lifetime. In this therapy, clients learn that they experience greater happiness when they select meanings or goals that align with their values, skills, abilities, and specific interests. Furthermore, individuals are encouraged to engage in beliefs, habits, and activities that align with their goals, while avoiding those that could potentially hinder their progress (Frisch, 2005). In QOL therapy, a meaningful life stems from the identification and successful pursuit of needs, goals, and aspirations that imbue life with a sense of purpose and direction. This sense of purpose and meaning enhances well-being and happiness. Given that the QOL therapy explicitly assists clients in identifying and successfully achieving their life goals, it can be posited that this therapy not only aims to improve happiness and well-being but also serves as a program designed to bolster meaning and success in achieving life goals (Frisch, 2005; Frisch, 2013).

The subsequent hypothesis of this study, which posited that a treatment approach focused on QOL enhancement would effectively aid in emotional self-regulation in patients with MS, when compared to a control group, was not confirmed. This finding was inconsistent with the results of studies by (Hashemi et al., 2018; Bagher-Kajbaf et al., 2016). One potential reason for this finding could be that individuals with MS may use inefficient emotional regulation strategies, which might be associated with the physical and psychological attributes of this disease (Eshaghzadeh et al., 2023; Phillips et al., 2014; Prakash et al., 2019). Therefore, addressing and managing disorders related to this disease may require interventions that are more comprehensive and applicable over an extended period. Another finding of this study demonstrated that a treatment strategy centered on enhancing QOL could effectively boost self-compassion in patients with MS, as compared to a control group.

The results of the present research are in line with the findings of studies by (Jafari, 2017; Ahmadi et al., 2020). They suggested that QOL enhancement is facilitated by fundamental principles, such as inner richness. Through these principles, individuals learn the significance of self-care and profound self-awareness. They also comprehend the significance of setting meaningful life objectives and upholding values that transcend their individual aspirations and principles. Also, according to this principle, individuals learn that by caring for themselves in a compassionate, comprehensive, and friendly manner, they cultivate a deep sense of kindness, alertness, and readiness to tackle daily life challenges. They are guided to adopt beneficial self-care practices, dedicating sufficient time and effort to activities that empower them daily. This approach not only enhances their personal strength but also creates opportunities for continuous growth and development (Frisch, 2005). Overall, self-compassion can predict physical, mental, and social health, as well as overall life satisfaction in MS patients (Eghbali et al., 2022; Nery-Hurwit et al., 2018).

Limitations

The current research has some limitations. It was conducted explicitly on individuals with MS residing in Tehran, Iran. This specificity limits the applicability of the research findings to other autoimmune diseases, patients living in diverse cultural settings, or non-patient groups. Therefore, caution should be exercised when generalizing these results. Moreover, the sample size was relatively small. There was also an unequal distribution of women and men in both the control and experimental groups. Additionally, the study only conducted a short follow-up of three months. For future research, it is recommended to consider longer follow-ups.

Furthermore, it would be beneficial for future studies to compare the effectiveness of various psychological interventions on factors influencing the mental health of patients with MS. Given that treatment approaches focused on QOL enhancement influence the pursuit of meaning in life, self-compassion, and the overall QOL in patients with MS, it is recommended to incorporate such therapeutic methods as effective interventions. This approach can be used alongside physical therapy to enhance the QOL of female patients with MS.

5. CONCLUSION

In QOL therapy, clients are taught essential skills for improved life management and the pursuit of life meaning. This approach enables them to regulate negative thoughts and structure personal goals around valuable life domains.

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Author contributions

MF and MB: Conceptualization, design, and methodology

MF: Data collection and formal analysis

MB: Supervision

MS, AM, AK: Investigation and project administration

MF, AK: Writing the original draft

MB: Revising the manuscript

Ethical approval

The Medical Ethics Committee of Shahid Beheshti University of Medical Sciences approved the study (Ethical approval code: IR.SBMU.MSP.REC.1401.251).

Informed consent

Written and oral informed consent was obtained from all individual participants included in the study.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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